

## CLAIMS

1. An internal member for a plasma treating vessel comprising a substrate and a  $Y_2O_3$  sprayed coating covered on a surface thereof.

2. An internal member for a plasma treating vessel comprising a substrate, a metal coating formed on a surface thereof as an undercoat, and a  $Y_2O_3$  sprayed coating formed on the undercoat as a top coat.

3. An internal member for a plasma treating vessel comprising a substrate, a metal film formed on a surface thereof as an undercoat, a middle layer formed on the undercoat and a  $Y_2O_3$  sprayed coating formed on the middle layer as a top coat.

4. An internal member for a plasma treating vessel according to claim 1, 2 or 3, wherein the metal coating as the undercoat is a coating of one or more metals or alloys selected from Ni and an alloy thereof, W and an alloy thereof, Mo and an alloy thereof and Ti and an alloy thereof and having a thickness of 50-500  $\mu m$ .

5. An internal member for a plasma treating vessel according to claim 1, 2 or 3, wherein the middle layer is a layer of  $Al_2O_3$  or a mixture of  $Al_2O_3$  and  $Y_2O_3$ .

6. An internal member for a plasma treating vessel according to claim 5, wherein the middle layer is formed by a layer having a gradient concentration such that a concentration of  $Al_2O_3$  is high at a side of the undercoat and a concentration of  $Y_2O_3$  is high at a side of the top coat.

7. An internal member for a plasma treating vessel according to claim 1, 2 or 3, wherein the  $Y_2O_3$  sprayed coating is a coating having a porosity of 0.5-10% and a thickness of 50-2000  $\mu m$ .

8. A method of producing an internal member for a plasma treating vessel, which comprises covering  $Y_2O_3$  on a surface of a substrate through a spraying process to form a  $Y_2O_3$  sprayed coating.

9. A method of producing an internal member for a plasma treating vessel, which comprises applying at least one surface treating process selected from CVD process, PVD process and thermal spraying process to a surface of a substrate to form a composite layer consisting of a layer of a metal of Ni, W, Mo or Ti or an alloy thereof as an undercoat and  $Y_2O_3$  as a top coat.

10. A method of producing an internal member for a plasma treating vessel, which comprises applying at least one surface treating process selected from CVD process, PVD process and thermal spraying process to a surface of a substrate to form a composite layer consisting of a layer of a metal of Ni, W, Mo or Ti or an alloy thereof as an undercoat,  $Al_2O_3$  or a mixture of  $Al_2O_3$  and  $Y_2O_3$  as a middle layer and  $Y_2O_3$  as a top coat.